REMARKS/ARGUMENTS

Claims 1-17 are pending. Claim 17 has been added. Claims 1-4 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,723,242 to Ohkata et al. Claims 1, 7, and 13-16 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,420,165 to Weinstein in view of U.S. Patent No. 6,521,444 to Numata and U.S. Patent No. 4,859,594 to Portier. Claims 1-4, 7-10, and 13-16 were rejected as being unpatentable over Ohkata in view of Weinstein, Numata, and Portier. Claims 5, 6, 11, and 12 were rejected as unpatentable over Ohkata in view of Weinstein, Numata, and Portier, and further in view of U.S. Patent No. 5,563,066 to Buchanan.

Summary of Claim Amendments

As described in Applicant's specification, during the work that led to the conception of the presently claimed invention, Applicant discovered that a particularly effective composition for decomposing dioxins can be prepared by a process including steps of:

(a) culturing Bacillus midousuji by mixing one of dioxins, a dioxin-containing substance, and chlorinated phenol with a medium comprising a nutrient source of Bacillus midousuji, supplying oxygen to the medium, and controlling the temperature of the medium to 62° C or above, which allows activity of the Bacillus midousuji;

(b) crushing cells of Bacillus midousuji cultured in step (a), to obtain crushed cells of Bacillus midousuji;

(c) subjecting the crushed cells of Bacillus midousuji obtained in step (b) to centrifugation to separate the crushed cells into a pellicle fraction comprising crushed cells containing a pellicle, and a cytoplasm fraction comprising crushed cells containing cytoplasm; and

(d) preparing the composition using the pellicle fraction obtained in step (c).

This is described in the specification, particularly at page 33 line 6 through page 38 line 17, as

well as page 46 line 10 through page 50 line 18. Furthermore, based on the experiments summarized at page 50 line 19 through page 54 line 7, the conclusion was reached that "the pellicle fraction of Bacillus midousuji cultured in the presence of the chlorinated aromatic compound such as dioxins breaks the ether bond bonding the two benzene rings, which is a characteristic structure of dioxins" (page 54, lines 8-12).

Based on this disclosure in the application as filed, Applicant has amended each of the independent claims to include the limitation that it is the pellicle fraction obtained through centrifugation of the crushed cells of Bacillus midousuji that is used for decomposing the dioxins. Applicant has also added new Claim 17 drawn to the above-noted process for preparing a composition for decomposing dioxins.

Thus, Claim 1 has been amended to recite that the system comprises:

a centrifuge operable to subject crushed cells of Bacillus midousuji, said cells having been cultured in the presence of a chlorinated aromatic compound that has a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring, **to centrifugation** to separate the crushed cells into a **pellicle fraction** comprising crushed cells containing a pellicle, and a cytoplasm fraction comprising crushed cells containing cytoplasm; and

a reaction tank holding at least:

the **pellicle fraction** of the crushed cells of Bacillus midousuji separated in the centrifuge, wherein the pellicle of the crushed cells of Bacillus midousuji breaks the ether bond of the structure of the dioxins;

the contaminated matter; and

an aqueous medium.

Claim 7 has similarly been amended to recite that the method comprises the steps of:

crushing cells of Bacillus midousuji that were cultured in the presence of a chlorinated aromatic compound that has a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring, to obtain

crushed cells of Bacillus midousuji;

subjecting the crushed cells of Bacillus midousuji to **centrifugation** to separate the crushed cells into a **pellicle fraction** comprising crushed cells containing a pellicle, and a cytoplasm fraction comprising crushed cells containing cytoplasm; and

mixing the **pellicle fraction**, the contaminated matter, and an aqueous medium, wherein the pellicle of Bacillus midousuji breaks the ether bond of the structure of the dioxins.

Claim 13 has been amended to recite that the preparation is prepared by a process comprising the steps of crushing cells of Bacillus midousuji that were cultured in the presence of a chlorinated aromatic compound that has a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring, and subjecting the crushed cells of Bacillus midousuji to centrifugation to separate the crushed cells into a **pellicle fraction** comprising crushed cells containing a pellicle, and a cytoplasm fraction comprising crushed cells containing cytoplasm, **the preparation comprising the pellicle fraction** of Bacillus midousuji, which breaks the ether bond of the structure of the dioxins.

Response to Rejections

The claimed invention is not suggested by the cited references. With respect to crushing of cells, the only cited reference that discloses crushing is Numata. However, Numata fails to disclose any step or device for subjecting the crushed cells to centrifugation in order to separate the crushed cells into a pellicle fraction and a cytoplasm fraction, as now required by the present claims.

Furthermore, none of the cited references remotely recognizes the fact, discovered by the Applicants, that the pellicle fraction of Bacillus midousuji cultured in the presence of a chlorinated aromatic compound that has a substituent comprising an oxygen atom bonded to an aromatic ring and having a chloro group bonded to an aromatic ring, is particularly effective for decomposing dioxins.

For these reasons, it is submitted that the system of Claim 1 is patentable over the cited references. The references fail to disclose a system comprising a centrifuge for separating crushed cells of Bacillus midousuji into a pellicle fraction and a cytoplasm fraction, and a reaction tank holding at least the pellicle fraction of the crushed cells of Bacillus midousuji separated in the centrifuge, the contaminated matter, and an aqueous medium.

It is further submitted that the method of Claim 7 is patentable over the cited references, which wholly fail to disclose or suggest a method in which crushed cells of Bacillus midousuji are subjected to **centrifugation** to separate the crushed cells into a **pellicle fraction** comprising crushed cells containing a pellicle and a cytoplasm fraction comprising crushed cells containing cytoplasm, and the **pellicle fraction**, the contaminated matter, and an aqueous medium are mixed, wherein the pellicle of Bacillus midousuji breaks the ether bond of the structure of the dioxins.

Similarly, the preparation of Claim 13 is not suggested by the cited references.

Finally, the method of preparing a composition for decomposing dioxins, according to new Claim 17, is not suggested by the references.

Accordingly, it is submitted that the cited references completely fail to teach or suggest the claimed system, methods, and preparation set forth in Claims 1-17.

Conclusion

Based on the above remarks, Applicant respectfully submits that the cited references do not render the pending Claims 1-17 unpatentable, and therefore the application is in condition for allowance.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper.

However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefor (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,

Donald M. Hill, Jr.
Registration No. 40,646

Customer No. 00826
ALSTON & BIRD LLP
Bank of America Plaza
101 South Tryon Street, Suite 4000
Charlotte, NC 28280-4000
Tel Charlotte Office (704) 444-1000
Fax Charlotte Office (704) 444-1111

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